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PATENT & TRADEMARK OFFICE

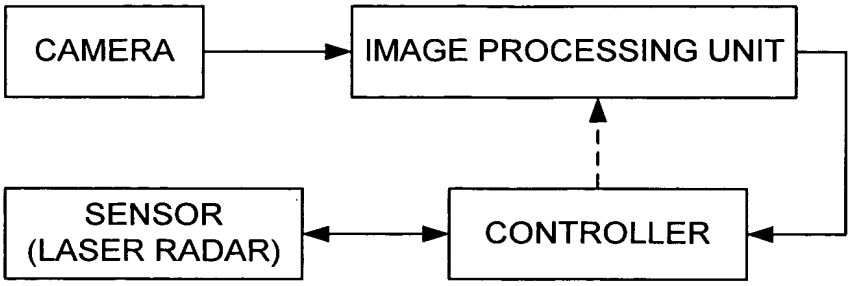

FIG. 1A

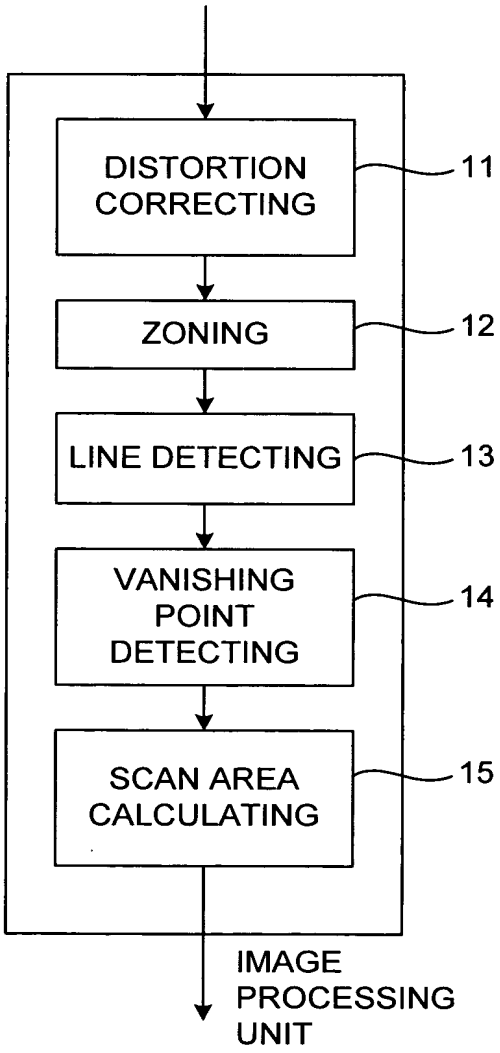

FIG. 1B

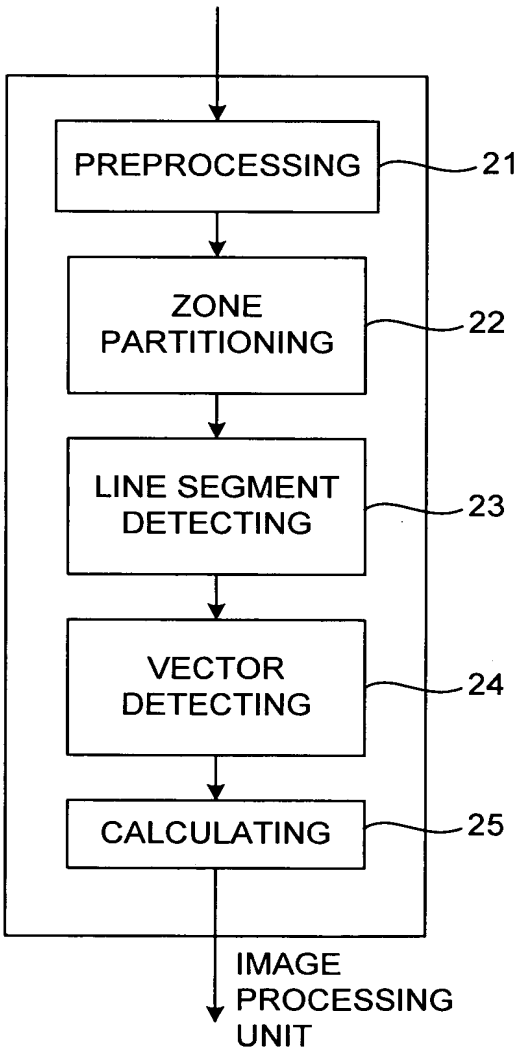

FIG. 1C

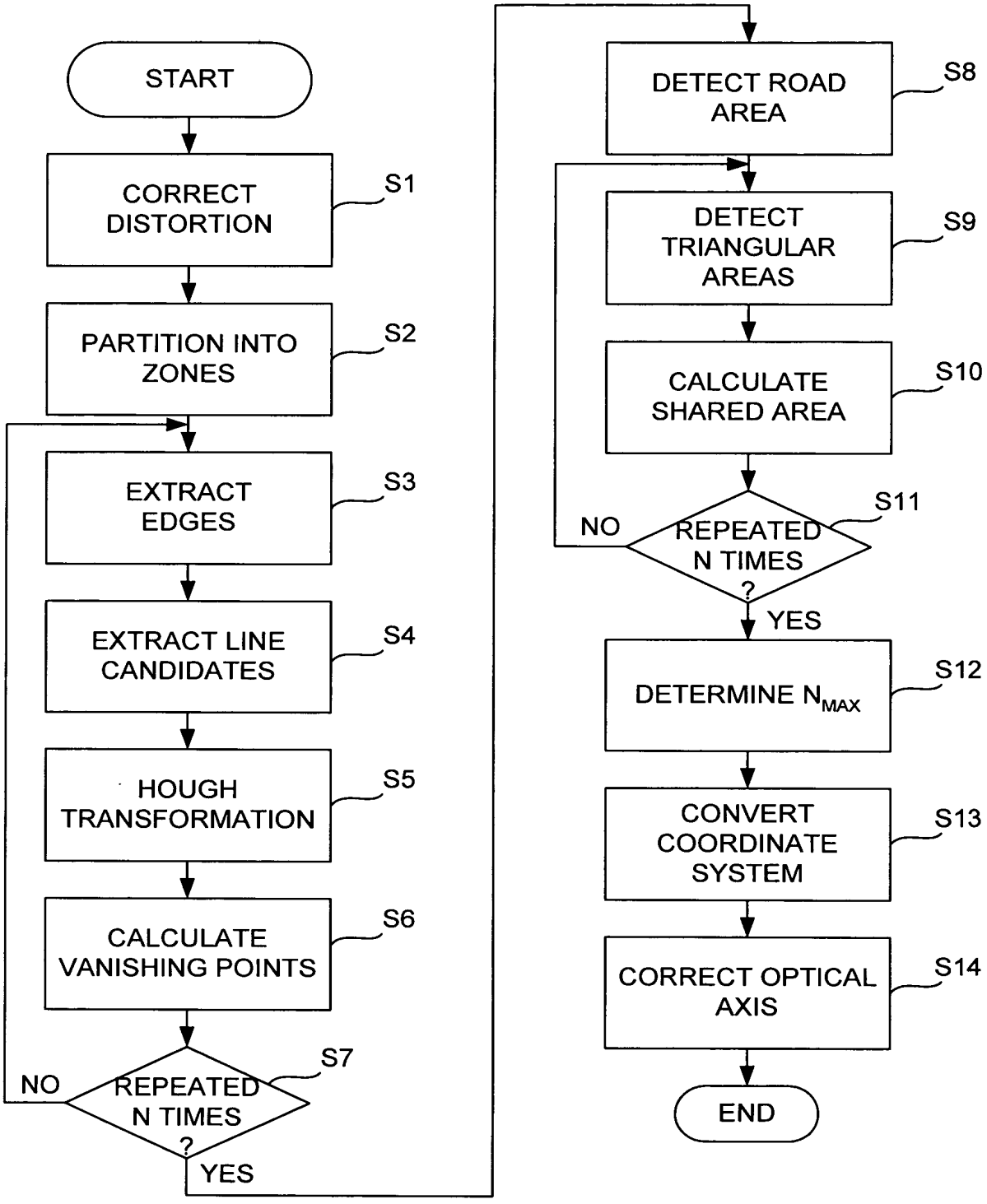
START
CORRECT DISTORTION
S1
PARTITION INTO ZONES
S2
EXTRACT EDGES
S3
EXTRACT LINE CANDIDATES
S4
HOUGH TRANSFORMATION
S5
CALCULATE VANISHING POINTS
S6
REPEATED N TIMES ?
S7
NO
YES
DETECT ROAD AREA
S8
DETECT TRIANGULAR AREAS
S9
CALCULATE SHARED AREA
S10
REPEATED N TIMES ?
S11
NO
YES
DETERMINE N_{MAX}
S12
CONVERT COORDINATE SYSTEM
S13
CORRECT OPTICAL AXIS
S14
END

FIG. 2

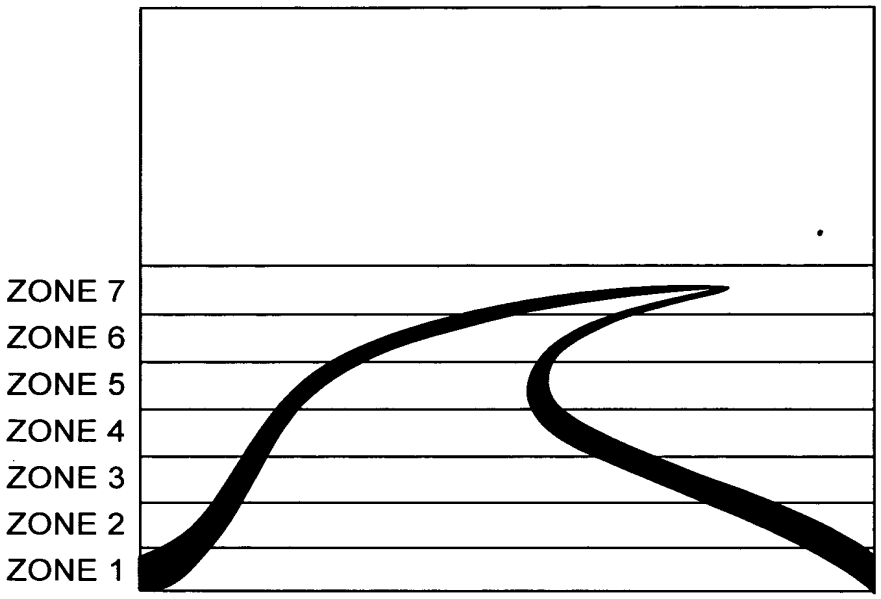
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

FIG. 3A

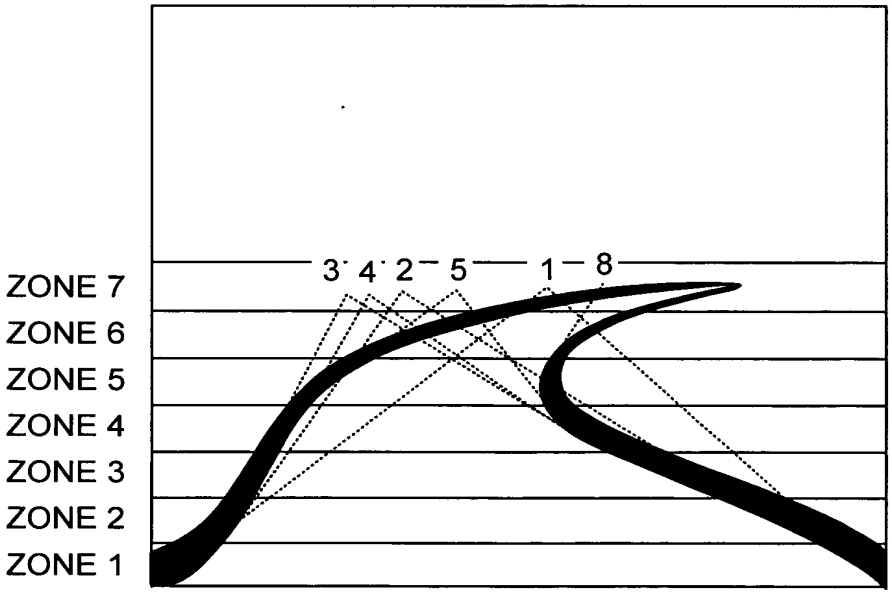
3
4
2
5
1
8
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

FIG. 3B

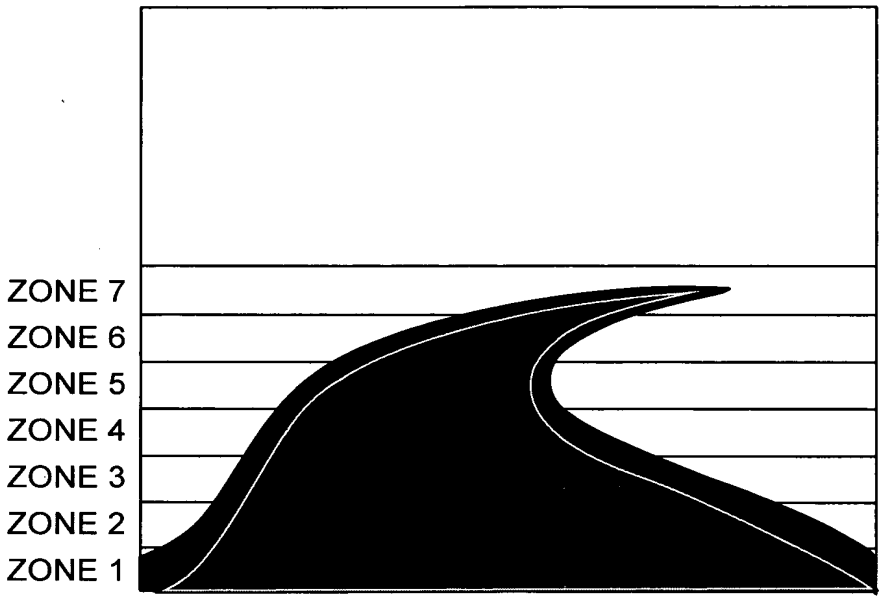
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

FIG. 4A

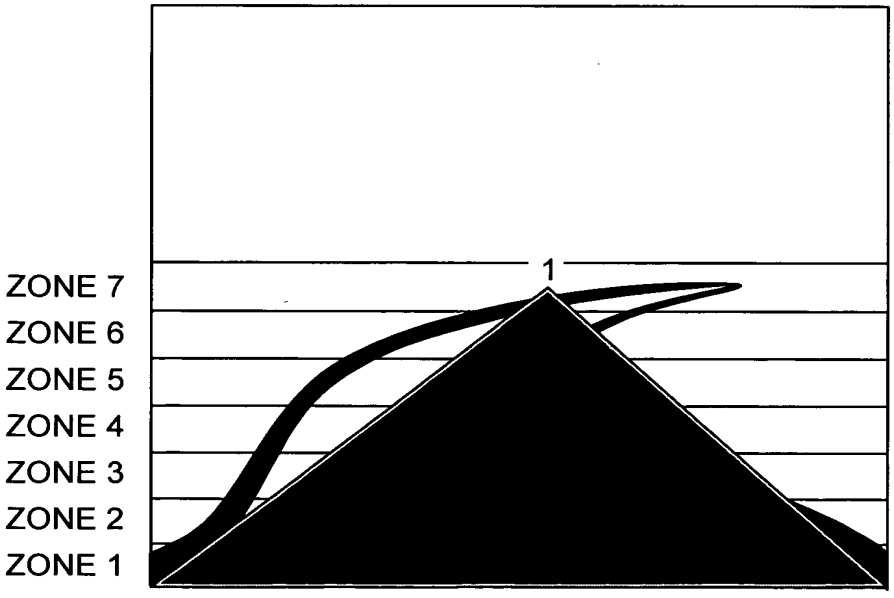
1
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1

FIG. 4B

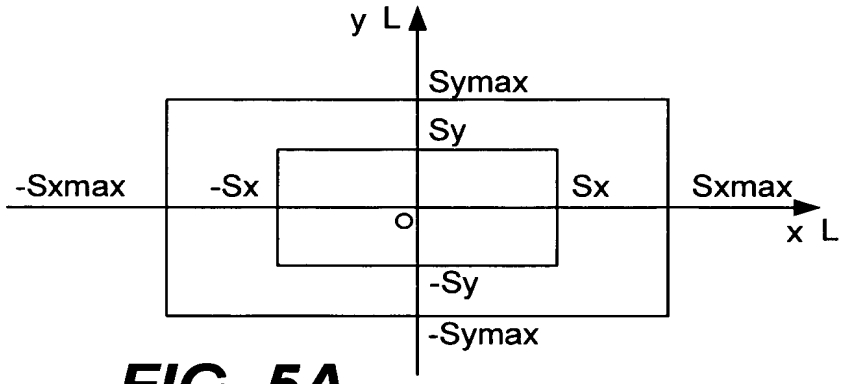

FIG. 5A

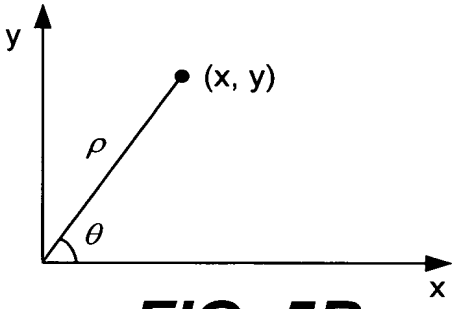

FIG. 5B

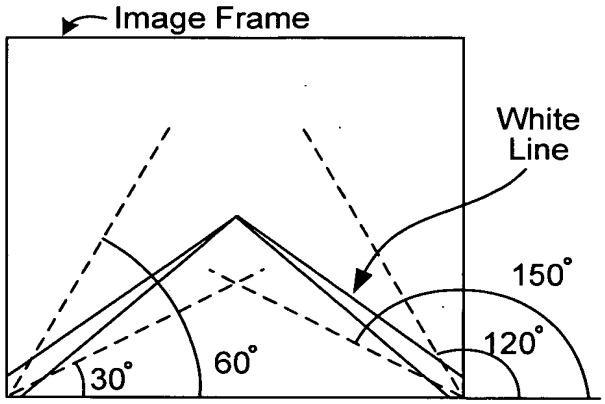

FIG. 5C

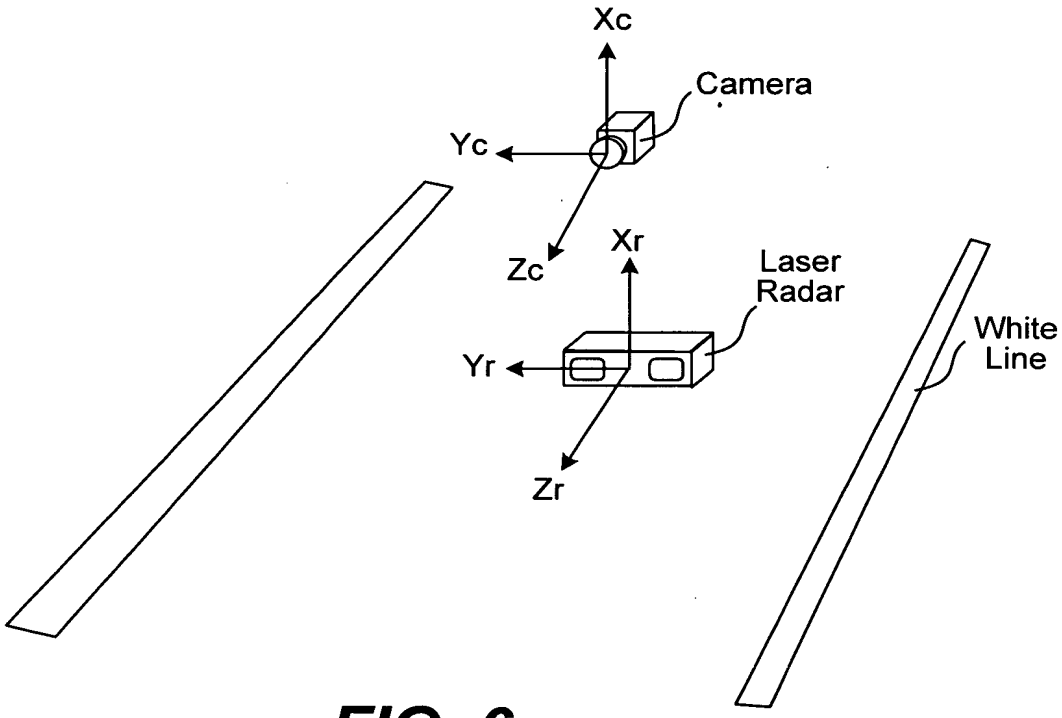

FIG. 6

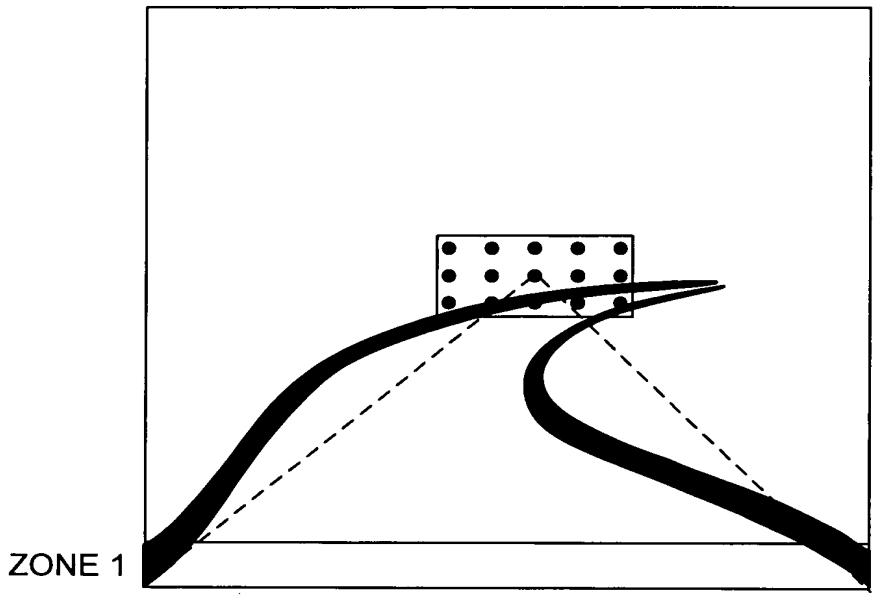

FIG. 7A

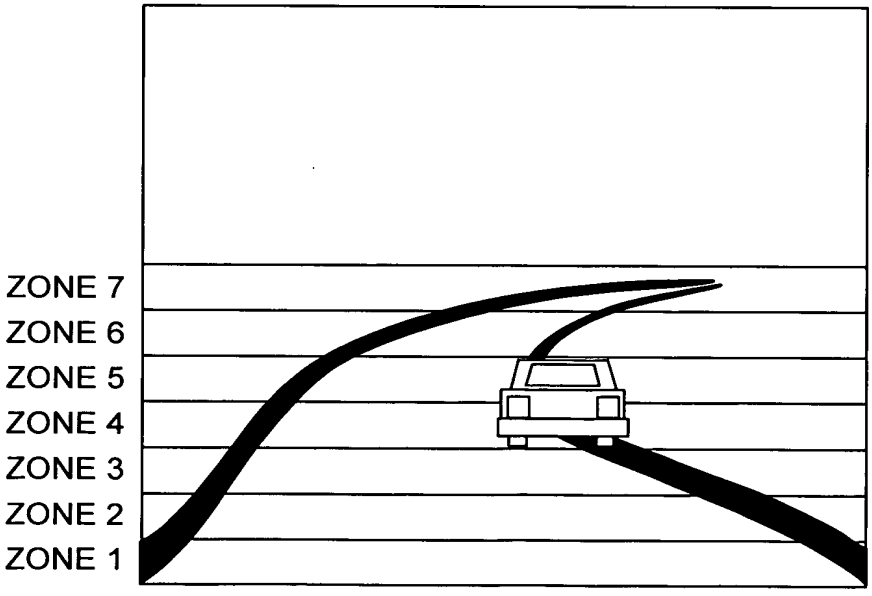

FIG. 7B

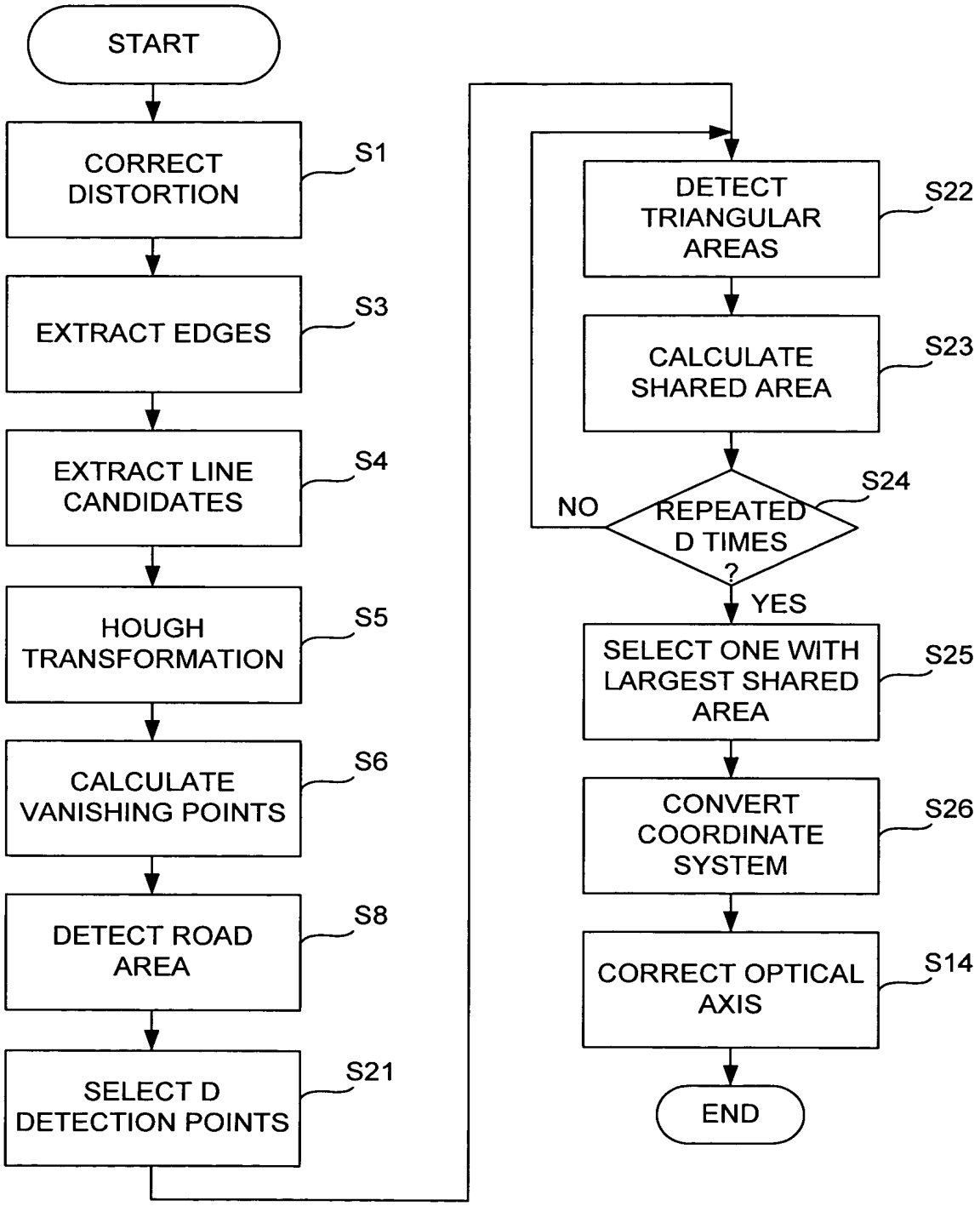
START
CORRECT DISTORTION
S1
EXTRACT EDGES
S3
EXTRACT LINE CANDIDATES
S4
HOUGH TRANSFORMATION
S5
CALCULATE VANISHING POINTS
S6
DETECT ROAD AREA
S8
SELECT D DETECTION POINTS
S21
DETECT TRIANGULAR AREAS
S22
CALCULATE SHARED AREA
S23
NO
REPEATED D TIMES ?
S24
YES
SELECT ONE WITH LARGEST SHARED AREA
S25
CONVERT COORDINATE SYSTEM
S26
CORRECT OPTICAL AXIS
S14
END

FIG. 8

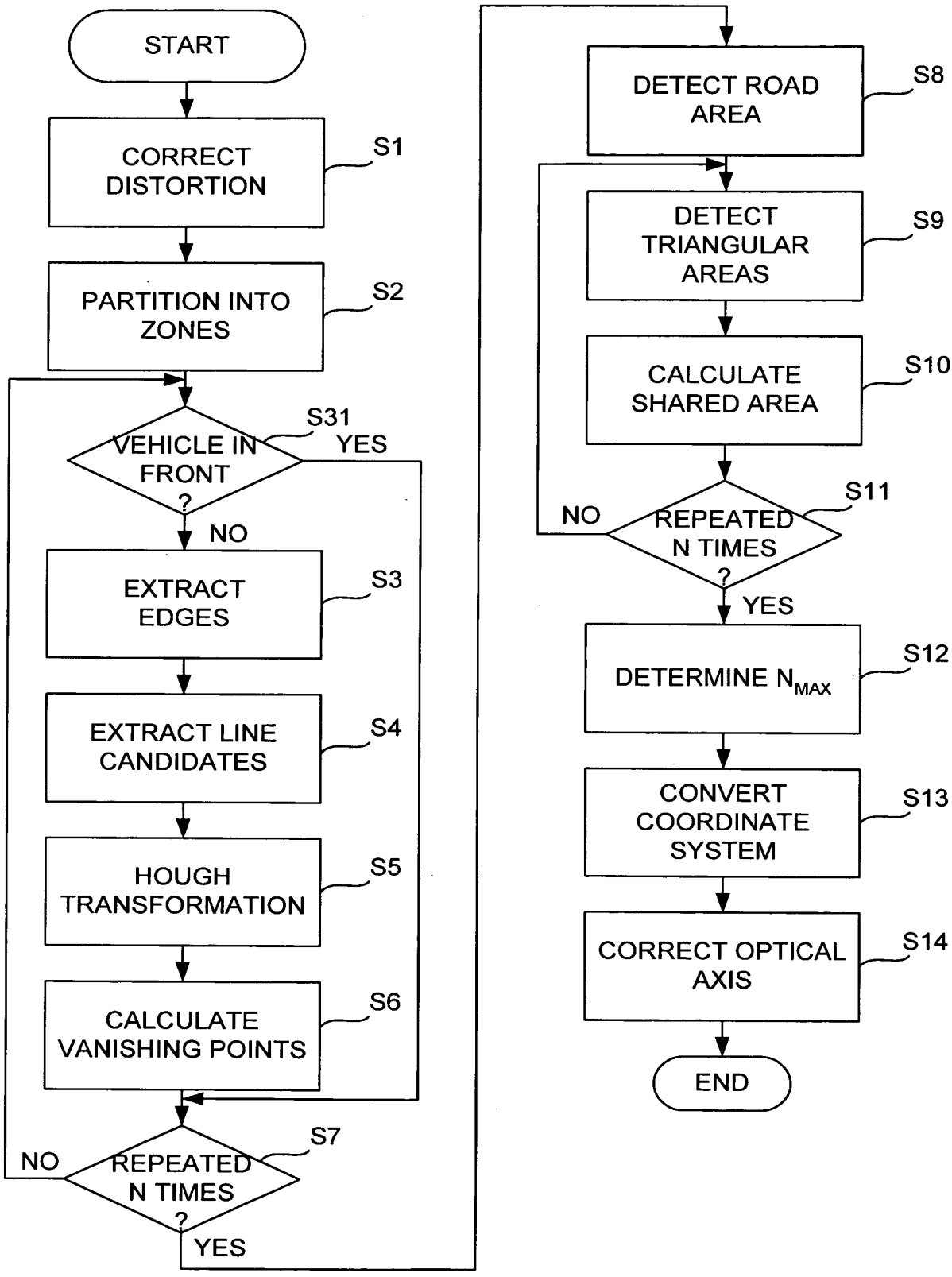
START
CORRECT DISTORTION
S1
PARTITION INTO ZONES
S2
VEHICLE IN FRONT ?
S31
YES
NO
EXTRACT EDGES
S3
EXTRACT LINE CANDIDATES
S4
HOUGH TRANSFORMATION
S5
CALCULATE VANISHING POINTS
S6
REPEATED N TIMES ?
S7
NO
YES
DETECT ROAD AREA
S8
DETECT TRIANGULAR AREAS
S9
CALCULATE SHARED AREA
S10
REPEATED N TIMES ?
S11
NO
YES
DETERMINE N_{MAX}
S12
CONVERT COORDINATE SYSTEM
S13
CORRECT OPTICAL AXIS
S14
END

FIG. 9